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Nolan

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[51] WHEELCHAIR VOICE CONTROL APPARATUS

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[58] Field of Search 704/275, 270

[56] References Cited

U.S. PATENT DOCUMENTS

4,207,959	6/1980	Youdin et al.	704/275
4,281,734	8/1981	Johnston	.	
4,407,393	10/1983	Youdin et al.	.	
4,483,405	11/1984	Noda et al.	.	
4,580,782	4/1986	Ochi	.	
4,807,273	2/1989	Haendle	.	
4,865,610	9/1989	Muller	.	
5,033,000	7/1991	Littlejohn et al.	.	
5,123,495	6/1992	Littlejohn et al.	.	

5,126,731	6/1992	Cromer, Jr. et al.	.
5,233,662	8/1993	Christensen	.
5,248,007	9/1993	Watkins et al.	.
5,275,248	1/1994	Finch et al.	.
5,335,313	8/1994	Douglas
5,345,538	9/1994	Narayanan et al.	.
5,365,026	11/1994	Cromer, Jr. et al.	.
5,493,618	2/1996	Stevens et al.	.
5,497,056	3/1996	Kurland et al.	.
5,555,949	9/1996	Stallard et al.	.

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[57] ABSTRACT

A voice-controlled wheelchair has a control system having a plurality of modes of operation in each of which only a limited number of commands for moving the wheelchair are executed. The commands are entered by a throat-engaging microphone, and backup commands are also recognized, including a command based on an excited utterance to stop the wheelchair. The control system is switchable by voice command between a first condition in which it executes other commands and a second condition in which it does not execute other commands.

20 Claims, 5 Drawing Sheets

